

APPENDIX E
PREVENTIVE MAINTENANCE SCHEDULE
(1997)

<u>EQUIPMENT</u>	<u>TYPE</u>	<u>INTERVAL</u>
AIR CONDITIONER	SERVICE/CLEAN	3 MOS.
CODEC EQUIPMENT	CLEAN FILTERS/ DIAGNOSTICS	6 MOS.
DEC EQUIPMENT/ PRINTER (HUB)	CLEAN/DIAGNOSTICS	3 MOS.
DEC EQUIPMENT/ PRINTER (NODE)	CLEAN/DIAGNOSTICS	6 MOS.
DS3 MUX	CHECK POWER SUPPLY	1 MOS.
EMI VERIFICATION	RF INTEGRITY TEST	6 MOS.
ENCLOSURE DOORS	CLEAN/ALIGN	1 MOS.
ESA FILTERS	CLEAN	6 MOS.
FFG	ALIGNMENT	6 MOS.
FIBER OPTIC CHASSIS	ALIGN/DIAGNOSTICS	6 MOS.
FMV/AUDIO	ALIGNMENT	6 MOS.
FURNITURE	ALIGNMENT/REPAIR	6 MOS.
GATEWAY	TEST/ALIGN	6 MOS.
HRG	TEST/ALIGN/CLEAN	6 MOS.
HUB SWITCH	CLEAN FILTERS	1 MOS.
HUB SWITCH	CHECK POWER AND REDUNDANCY	3 MOS.
HUB SWITCH	CHECK POWER (SIMPLEX)	6 MOS.
MULTIPROGRAMMERS	CLEAN FILTERS	6 MOS.

UPS	BATTERY TRANSFER TEST	1 MOS.
UPS	BATTERY/EQUIPMENT INSPECTION	3 MOS.

1. AIR CONDITIONING PREVENTIVE MAINTENANCE. This procedure is performed to insure the operation of facility air conditioning equipment at sites with units provided and maintained by the maintenance contractor.

a. The contractor will change air filters and check system oil and freon levels. Any necessary corrective actions will either be done on the spot or scheduled with the user by the contractor.

b. FREQUENCY - 3 months; time required - 90 minutes per site.

2. CODEC PREVENTIVE MAINTENANCE INSPECTION. This procedure will insure that all Codecs are operating properly and have sufficient air flow for cool operation.

a. The technician will clean the filters and check both fans for proper operation, run diagnostics, and check power supply voltages.

b. This procedure should take 30 minutes per site.

c. FREQUENCY - 6 months

d. The Codecs are located in the Equipment Support Area.

3. DEC EQUIPMENT PREVENTIVE MAINTENANCE INSPECTION. This procedure is performed periodically to insure proper operation of the computer processors (MicroVAX II and VAX 4000-200).

a. The technician will clean the air filters, check the operation of the fan, and examine the error logger file for significant data. The error logger will then be reset.

b. This procedure should take 40 minutes per piece of equipment checked.

c. FREQUENCY - 3 months (HUB), 6 months (NODES)

d. Equipment affected includes:

- (1) Node Control Processor - ESA Rack 16
- (2) Hub Control Processor (only at site #1)
- (3) User Control Terminal Processor - Console Area Wall Unit

4. DS3 MULTIPLEXER. This procedure will check each power supply in each DS3 Multiplexer chassis.

- a. The technician will use test equipment to individually test each power supply for proper voltage.

- b. If a problem is detected, appropriate alignments and/or replacement parts will be used to correct it.

- c. This procedure should normally take 20 minutes per site, unless problems increase the time needed for repair.

- d. FREQUENCY - Monthly

5. EMI TEST. This procedure, although not strictly preventive maintenance, is performed to insure that shielding requirements are maintained by all units in the system.

- a. The technician will perform radiation detection tests on each rack in the Equipment Support Area and at specific points on the Console Shielded Enclosure, and may include required rework.

- b. This procedure should take 4 to 6 hours per site; rework may required 8 to 16 hours per site.

- c. FREQUENCY - 6 months

6. ENCLOSURE DOOR PREVENTIVE MAINTENANCE. This procedure insures the mechanical operation integrity of the Rayproof Enclosure doors.

- a. The technician will check alignment of all doors and adjust as necessary; replace finger stock as required; clean finger stock and knife edge; check latching operation; lubricate designated moving parts in latching mechanism; and check door alarms.

- b. This procedure should take 90 minutes per site.

- c. FREQUENCY - Monthly

d. Equipment affected:

- (1) Site 1-HCP/Hub Switch enclosure door
- (2) Site 2-2 Console enclosure doors
- (3) Site 3-2 Console enclosure doors
- (4) Site 4-1 Console enclosure door
- (5) Site 5-1 Console enclosure door
- (6) Site 8-1 Console room door and 2 ESA enclosure doors
- (7) Site 11-2 Console enclosure doors
- (8) Site 12-1 Console enclosure door
- (9) Site 13-2 Console enclosure doors
- (10) Site 14-2 Console enclosure doors
- (11) Site 15-2 Console enclosure doors
- (12) Site 16-2 Console enclosure doors
- (13) Site 17-2 Console enclosure doors

7. EQUIPMENT SUPPORT AREA FILTERS PREVENTIVE MAINTENANCE. This procedure insures air flow through the equipment in the Equipment Support Area.

a. The technician will clean the filters and check fan operation on the following equipment:

- (1) VGC computer - check fan.
- (2) Node Termination Unit - check fan and clean screen.
- (3) Audio/Video Switch - check fan.

b. This procedure should take 15 minutes per site.

c. FREQUENCY - 6 MONTHS

8. FREEZE FRAME GRAPHICS PREVENTIVE MAINTENANCE. This procedure is intended to insure that an acceptable video image is sent to other sites while in a conference, and that the video received

from the other sites is within system parameters.

a. The technician will use one of several methods for looping the site's transmitted video data back to the receiving monitors and speakers.

b. If a problem is detected, appropriate alignments and/or replacement parts will be used to correct it.

c. This procedure should normally take 20 minutes per site, unless problems increase the time needed for repair.

d. FREQUENCY - 6 MONTHS

e. Equipment which will be checked during this procedure include:

- (1) FFG camera
- (2) FFG Camera Control Unit
- (3) FFG Control Panel (Sites 2 and 10)
- (4) FFG Utility Monitor
- (5) Fiber Optic path (if used)
- (6) Graphics section of Codecs
- (7) DS3 Mux channels 1-5

9. FIBER OPTIC CHASSIS PREVENTIVE MAINTENANCE. This procedure is performed to insure proper operation of the Artel fiber optic chassis.

a. The technician will use test equipment to individually test each power supply for proper voltage.

b. If a problem is detected, appropriate alignments and/or replacement parts will be used to correct it.

c. This procedure should normally take 20 minutes per site, unless problems increase the time needed for repair.

d. FREQUENCY - 6 months

10. FULL MOTION VIDEO/AUDIO PREVENTIVE MAINTENANCE. This procedure is intended to insure that an acceptable video image and

audio level is sent to other sites while in a conference, and that the video and audio received from the other sites is within system parameters.

a. The technician will use one of several methods for looping the site's transmitted video and audio data back to the receiving monitors and speakers.

b. If a problem is detected, appropriate alignments and/or replacement parts will be used to correct it.

c. This procedure should normally take 30 minutes per site, unless problems increase the time needed for repair.

d. FREQUENCY - 6 months

e. The equipment checked includes:

- (1) FMV Camera and lens
- (2) FMV Camera Control Unit
- (3) Fiber Optic path (if used)
- (4) FMV section of Codecs
- (5) DS3 Mux Channels 1-5

11. FURNITURE PREVENTIVE MAINTENANCE. This procedure is performed to insure that the moving parts of the console furniture operate properly and that the furniture's appearance is in "like-new" condition. Damage shall be repaired.

a. The technician will inspect all doors and drawers for alignment and ease of operation, inspect rear doors for proper latching, check for proper operation of all door alarms. Adjust or repair as required.

b. This inspection should take 20 minutes per site.

c. FREQUENCY - 6 months

12. GATEWAY PREVENTIVE MAINTENANCE. This procedure is performed to insure the gateway is functioning properly.

a. The technician will initiate a gateway conference to SVTS, Host and external systems. The technician will verify that each location can receive/transmit an acceptable video and audio.

b. The technician will adjust or align the gateway fiber optic interfaces as necessary.

c. The technician will run diagnostics for each gateway codec. The technician will also check each codec's fan.

d. The technician will check the gateway software to ensure proper functionality.

e. This procedure should take 60 minutes per gateway.

f. FREQUENCY - 6 months

13. HIGH RESOLUTION GRAPHICS PREVENTIVE MAINTENANCE. This procedure is performed to insure proper functionality of the High Resolution Graphics (HRG) system. The current HRG system comprises of the Databeam computer, scanner, two printers and two monitors.

a. Testing shall be conducted in a conference if possible. Standalone mode shall be used if another SVTS site is not available for testing. If testing is conducted in a test conference, verify operation of the HRG in HiRel mode.

b. The technician will test the following capabilities: scanning, display from disk file, monochrome and color print functions.

c. Clean scanner glass and monitor screen.

d. Check processor fan.

e. Test operation of printers. Align or adjust image position on printout.

f. This procedure should normally take 40 minutes per site.

g. FREQUENCY - 6 months

14. HUB SWITCH PREVENTIVE MAINTENANCE. This procedure will insure that the Hub switch is operating properly and has sufficient air flow for cool operation.

a. The technician will clean the filters and the fans for proper operation, check power and redundant functions.

b. This procedure should take 60 minutes.

c. FREQUENCY -

Clean Filters - 1 month

Power and Redundancy - 3 months

Power Supply (Simplex) - 6 months

15. MULTIPROGRAMMER PREVENTIVE MAINTENANCE. This procedure is a periodic check of the operation of the Multiprogrammers.

a. The technician will clean the filters, check the fans and voltages.

b. This procedure should take 45 minutes per site.

c. FREQUENCY - 6 months

d. Equipment tested includes:

(1) Multiprogrammer - Equipment Support Area

(2) Console Multiprogrammer - Wall Unit

(3) Red Technical Control Multiprogrammer - ESA

(4) Black Technical Control Multiprogrammer - ESA

16. UNINTERRUPTED POWER SYSTEM PREVENTIVE MAINTENANCE. This procedure insures the ability of the UPS to sustain system operation for the designated length of time in the event of a commercial power failure (sites with units maintained by the maintenance contractor).

a. The technician will perform a battery transfer test monthly to insure that proper charging current and battery voltage is being maintained by the UPS. The chart paper in the UPS Temperature Chart Recorders will be changed also. Although this procedure is scheduled on a standard 28 day month, the actual procedure will be performed on a calendar month basis to make maximum use of the chart recorder charts.

b. Quarterly the contractor will perform a battery inspection to eliminate batteries which may be failing.

c. Annually the contractor will perform an inspection of the UPS Control Module.

- d. Annually the contractor will perform a detailed inspection of all the batteries in the UPS.
- e. The monthly task should take 30 minutes per site.
- f. The quarterly task should take 2 hours per site.
- g. The annual tasks should take 8 hours per site.